

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)

Price Cap Performance Review)
for Local Exchange Carriers)

CC Docket No. 94-1

RECEIVED

JUN 29 1994

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

REPLY COMMENTS OF AMERITECH

Ameritech¹ submits these reply comments in response to the Commission's Notice of Proposed Rulemaking in this proceeding.²

In its comments, Ameritech offered several modifications of the Commission's price cap plan that should be made to conform it more closely to its original incentive purposes and to adapt it to the accelerating rate of technological and competitive change in telecommunications. Specifically, increased LEC pricing flexibility is required to permit reasonable response to competitive pressures. In addition, annual review of carrier earnings should be eliminated since it substantially dilutes the incentive effects of price caps. Also, the treatment of optional new services should be modified to remove the substantial regulatory impediments to their development and introduction. Moreover, the Commission should not increase the price cap plan's productivity factor to capture the benefits of the local exchange carriers' ("LECs") productivity enhancing efforts. Finally, there is no reason to increase price cap LECs' reporting requirements.

In these reply comments, Ameritech will focus on particular issues where elaboration might be helpful in light of the comments of other parties.

¹ Ameritech means: Illinois Bell Telephone Company, Indiana Bell Telephone Company, Incorporated, Michigan Bell Telephone Company, The Ohio Bell Telephone Company, and Wisconsin Bell, Inc.

² In the Matter of Price Cap Performance Review for Local Exchange Carriers, CC Docket No. 94-1, Notice of Proposed Rulemaking, FCC 94-10 (released February 16, 1994) ("NPRM").

No. of Copies rec'd C+9
List ABCDE

RECEIVED

JUN 29 1994

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

I. THE COMMISSION SHOULD VIEW THIS PROCEEDING AS AN OPPORTUNITY TO SHAPE PRICE CAP REGULATION TO FIT THE ACCELERATING PACE OF CHANGE IN THE INDUSTRY.

In this docket, the Commission has the opportunity to significantly improve price cap regulation. As Professor Robert G. Harris points out in his report in support of USTA's reply comments, the Commission should dismiss the calls for a virtual return to rate of return regulation and modify its price cap regulatory model to fulfill the vision of the National Information Infrastructure ("NII") by providing better incentives for LEC investment and reasonable opportunity for LECs to introduce new services and to compete in the market.

In their comments, LECs argue for modifications of price cap regulation to align it more closely with its original incentive goals -- e.g., the elimination of sharing and the improvement of rules governing the introduction of new services. In addition, they requested pricing flexibility that permits them to respond to the competitive pressures that exist today and that will increase in the future -- e.g., changes to the existing highly restrictive basket and band structure.

The comments of others have, for the most part, followed the pattern that one might expect. Access customers urge the Commission to make changes that would lower the price cap indexes and the sharing benchmark, utilizing the regulatory process in an attempt to get a better "deal" for access services. Competitive access providers ("CAPs") argue for increased restrictions on LEC pricing flexibility to minimize competitive pressure from the LECs and to maintain the price umbrella under which they can serve low cost customers and still reap "supracompetitive" profits.

The proposals of other commentators must be put in perspective. Lowering LEC access rates and sharing LEC profits with interexchange carriers ("IXCs") has provided no benefit to consumers. Attachment A demonstrates that IXC prices have been

steadily rising as access charges have gone down under price caps.³ Moreover, the Commission itself has noted the trend of increasing IXC prices. Its information shows that the change in price index for interstate toll services (those which utilize the access services subject to the price cap regulatory mechanism being considered in this proceeding), rose 6.5% in 1993 and 9.6% from March, 1993, to March, 1994, exceeding by a full order of magnitude the indexes for local service and intrastate toll.⁴ Thus, LEC access charge reductions are not finding their way into the pockets of ordinary consumers.

However, there is another aspect of LEC price cap regulation that does have consumer ramifications. That is the degree to which price cap regulation provides incentives for LECs to invest in the NII, to implement new technologies, and to offer new services, all of which would provide direct benefits to consumers. As noted in the attached report by Professors Pablo T. Spiller and Shane Greenstein and Ms. Susan McMaster,⁵ studies of state regulatory environments reveal that pure price cap regimes, that is price caps without sharing, tend to result in a greater investment by LECs in modern telecommunications services and technologies.

³ Attachment A was submitted in the Reply Comments of Petitioners (filed September 17, 1993) In the Matter of Petition for Rulemaking to Determine the Terms and Conditions Under Which Tier 1 LECs Should Be Permitted to Provide Interexchange Telecommunications Services, RM-8303. It is no defense for an IXC to say the chart does not reflect available discount plans since a substantial portion of consumers do not qualify for such price breaks.

⁴ "Trends in Telephone Service," Industry Analysis Division, May, 1994.

⁵ "The Effect of Incentive Regulation on Local Exchange Companies' Deployment of Digital Infrastructure," Shane Greenstein, Susan McMaster and Pablo T. Spiller, June 24, 1994, included as Attachment B.

Ameritech agrees in part with the comments of MCI,⁶ ICA,⁷ Teleport⁸ and Ad Hoc⁹ to the effect that competition is the best way to ensure the development of the NII. These and other parties, however, go on to make proposals that would unreasonably restrict LECs' ability to compete. In fact, the best way to ensure the development of the NII is to permit all industry participants to compete on an equal basis. To do otherwise would result in a less than optimal level of investment and competitive energy. This would ultimately harm consumers by delaying the introduction of new services and artificially inflating prices. It is only when a LEC's pricing is not unreasonably restrained that it will have an opportunity to compete, and the full benefits of competition will be realized. It is only when LEC earnings are not artificially restrained that the benefits of competing and investing can be fully realized. It is only then that competition will be as vigorous as it can be.

The Commission should ignore the ghost stories of those parties that use the hypothetical to try to convince the Commission to unreasonably restrain LEC earnings and LEC ability to respond to competitive pressures in an effort to protect their bargain or improve their competitive position. Such measures will only shackle potential contributors to this nationwide effort to develop the NII and lessen the chances that it will be implemented as quickly or developed as fully as it might be.

⁶ At 13. "The best way to secure telecommunications infrastructure investment is to establish an environment in which all participants have the opportunity and the incentive to provide a full range of services to all geographic areas . . . The Commission can better encourage infrastructure development by implementing policies that will enable all willing market participants to maximize their network investments . . . Competition is the key to spurring technology investment."

⁷ At 7. "Increased competition will provide a more efficient mechanism for transferring advanced telecommunications and information technologies into the national economy."

⁸ At 6. "The development and deployment of the ubiquitous national information infrastructure depends on the development of competition."

⁹ At 10. "A fully competitive market structure should be the preferred paradigm for the NII."

II. AMERITECH SUPPORTS USTA'S REPLY COMMENTS.

In these reply comments, Ameritech will only elaborate on particular issues where it believes it would contribute to the discussion about the potential benefits or detriments of various proposed changes to the price cap plan. In general, however, Ameritech would note that it supports many of the positions taken by USTA in its reply. Specifically, Ameritech concurs in USTA's analyses supporting the elimination of the sharing mechanism; opposing index changes to reflect purported decreases in LEC cost of capital; demonstrating that LEC returns are reasonable under price caps; showing that AT&T's and MCI's cost of capital calculations are defective; and refuting MCI's allegations that LECs improperly manipulate fourth quarter earnings. In addition, Ameritech generally supports USTA's proposal as to how the price cap plan's pricing restrictions should change to respond to competitive pressures faced by the price cap LECs. Also, Ameritech joins in USTA's opposition to MFS's proposed TS-LRIC mandatory cost standard and to ICA's proposed "price linking" approach to new services. Further, Ameritech supports USTA's challenge to the productivity studies submitted by Ad Hoc, MCI and AT&T, its opposition to the adoption of a per line carrier common line adjustment formula, to the limitation of the scope of exogenous cost treatment, and to the expansion of service quality and infrastructure reporting requirements.

III. THE PRICE CAP FORMULA SHOULD NOT BE ADJUSTED FOR PURPORTED CHANGES IN LEC COST OF CAPITAL.

Ameritech would make these comments in addition to those of USTA opposing proposed changes to the price cap formula to account for alleged decreases in LEC cost of capital. In particular, Ameritech takes issue with AT&T's proposal to make a one-time change to LEC price cap indexes ("PCIs") to reflect the LECs' alleged lower cost of capital. Assuming, for argument sake only, that AT&T's numbers are correct, the

reasons it gives for requiring such a change are curiously deficient. AT&T estimates that the LECs' average weighted cost of capital declined by about 124 basis points during price caps.¹⁰ AT&T concedes, however, that capital cost reductions are reflected in the GNPPI factor.¹¹ However, AT&T maintains that, because LECs are roughly twice as capital intensive as the average firm in the U.S. economy, they receive twice the benefit from an economy-wide decline in the cost of capital than what is reflected in the GNPPI.

However, AT&T's numbers belie that conclusion. AT&T itself points out that the economy-wide interest rate drop was 220 basis points during the same period. According to AT&T, the RBOCs' cost of debt fell only 86 basis points from 1991 to 1993.¹² Thus, the GNPPI actually includes an interest rate drop that is twice as great as what AT&T claims is the drop in the LECs' cost of debt. Assuming that a similar relationship holds for cost of equity, even if one accepts AT&T's weighted capital intensity hypothesis, as a practical matter, all of the LECs' alleged cost of capital reductions have been actually reflected in the GNPPI.

Nevertheless, the Commission should dismiss AT&T's attempt to modify the basic price cap formula to differentiate LECs from the typical U.S. firm as reflected in the GNPPI factor. Such an effort would in fact overturn the Commission's decision to select GNPPI as the appropriate price cap inflation index. The Commission twice rejected suggestions that it develop an industry-specific cost index to use in both AT&T's and the LECs' price cap formulae. The Commission declined the invitation

¹⁰ AT&T at 31.

¹¹ AT&T, Appendix E, Page 4.

¹² AT&T, Appendix D, Table D.2.

stating that the GNPPI was preferable because it is “readily available, easily understood and immune to manipulation by the carrier.”¹³

AT&T’s proposal involves an attempt to create retroactively a different inflation measure. It alleges deficiencies in the amount of capital cost changes captured by the GNPPI and seeks to have the difference “disgorged” by the LECs. Even if the Commission accepts AT&T’s invitation to account for the differences in capital intensity between the “typical” firm and the telecommunications industry, then the Commission must make similar adjustments for other types of inputs as well, such as labor, power, etc.; and then the Commission must deal with the issue of how often to recalibrate these adjustments.¹⁴ Thus, it is apparent that the Commission’s reasons for selecting a non-industry specific inflation index are still valid and the index should not be tampered with.

In conclusion, the Commission should decline to make adjustment in its price cap regulatory mechanism to attempt to capture capital cost changes. As AT&T has recognized, the GNPPI already captures economy-wide capital cost shifts.¹⁵ Moreover, the Commission has previously declined to make any adjustment to AT&T’s formula even though “AT&T’s capital costs . . . declined during this [initial price cap] period as interest rates fell to their lowest level in many years and its share prices have generally increased.”¹⁶

¹³ In the Matter of Policy and Rules Concerning Rates for Dominant Carriers, CC Docket No. 87-313, Report and Order and Second Notice of Proposed Rulemaking, FCC 89-91 (released April 17, 1989) (“AT&T Price Cap Order”) 4 FCC Rcd at 2794 (at ¶ 197). *See also*, In the Matter of Policy and Rules Concerning Rates for Dominant Carriers, CC Docket No. 87-313, Second Report and Order, FCC 90-314 (released October 4, 1990) (“LEC Price Cap Order”) 4 FCC Rcd 6786 (at ¶ 54).

¹⁴ And, of course, the decisions on these points should not have the effect of making a change only when it results in an effective price decrease, and the change should not have a retroactive effect.

¹⁵ Note 11, *supra*.

¹⁶ In the Matter of Price Cap Performance Review for AT&T, CC Docket No. 92-134, Report, FCC 93-326 (released July 23, 1993) 8 FCC Rcd 6968 at ¶ 22.

IV. LEC INCENTIVES COULD BE IMPROVED BY PERMANENTLY EMBEDDING CURRENT SHARING LEVELS IN LECs' PCIs.

Several parties, of course, suggest that the price cap sharing benchmark be reduced by an amount proportional to the alleged reduction in current LEC capital costs. As Ameritech suggested in its initial comments, however, rather than increase sharing amounts by lowering the sharing benchmark, sharing should be modified to eliminate the rate-of-return-like periodic review of LEC earnings and to embed current sharing amounts based on 1993 earnings permanently into the LECs' price cap indexes on a going-forward basis.

Sharing, based on an annual review of carrier earnings, was never an integral part of the concept of price caps as incentive regulation, nor is it a part of AT&T's price cap scheme. Rather, it was introduced into LEC price caps primarily to alleviate the concern that the industry-wide productivity offset figure of 2.8% might constitute an understatement of an individual price cap LEC's actual inherent productivity performance.

Ameritech's proposal, by eliminating the annual review of LEC earning levels, would improve LEC efficiency incentives; but it would also retain a form of sharing that accounts for individual LEC pre-price cap productivity performance by effectively requiring LECs to share permanently at the current level. Sharing would not be eliminated. It would, in fact, be made permanent in a way that does not detract from the incentives of pure price caps.

It is certainly logical that the annual reexamination of carrier earnings and forced forfeiture of productivity achievements over a certain level constitutes a disincentive to engage in those productivity improvements in the first instance as well as a disincentive to investment generally. With this filing, however, Ameritech is including dramatic evidence of the fact that "sharing" significantly reduces the incentive effects of pure price caps. Professors Pablo T. Spiller and Shane Greenstein and Ms. Susan McMaster

conducted a thorough examination of how the patterns of investment of local exchange carriers in modern telecommunications infrastructure were influenced by different regulatory environments.¹⁷ They examined state regulatory structures because their variety and application to specific state jurisdictions made it feasible to isolate the effects of different methods of regulation on the levels of investment in new technology. By contrast, the Commission's price cap plan applies uniformly to all large LECs across virtually all states. The study concluded that:

[P]rice regulation (and in particular price caps) is a more potent regulatory mechanism than the standard earnings sharing scheme [in providing greater incentives to deploy modern equipment[. . . [W]hen associated with an earnings sharing scheme, price regulation is less effective in triggering infrastructure deployment than when it is implemented by itself.¹⁸

In particular, the Greenstein-McMaster-Spiller study demonstrates that LECs subject to both price caps and earnings sharing schemes at the state level have significantly lower deployment of fiber optic cable -- the interstate highway portion of the NII -- than LECs subject to pure price cap regimes. For LECs with no state incentive regulation in 1991, the adoption of a pure price cap regime would have increased fiber optic deployment by 100% whereas those same LECs subjected to price caps and earnings sharing would have had a negligible change in fiber investment. Pure state price cap regimes, similarly, are shown to have a large positive and significant impact on the deployment of SS7 and ISDN technologies. Again, the model results suggest that LECs without any incentive regulation in 1991 would have increased their deployment of these technologies by 100% if subjected to a pure price cap regime.

Given these facts, the policy choice before the Commission is clear. It should

¹⁷ Attachment B.

¹⁸ Id. at 2-3.

eliminate the sharing mechanism¹⁹ and thereby increase LEC incentives to invest in new technologies and services that will benefit a vast array of consumers, businesses, and government users of telecommunications services. Maintaining or increasing sharing, as shown above, will primarily benefit the shareholders of the IXC's while at the same time reduce the incentives for LEC investment in new technologies and services.

V. STEPS SHOULD BE TAKEN TO PERMIT LEC PRICING FLEXIBILITY TO RESPOND TO COMPETITION EVEN PENDING A BROADER INVESTIGATION INTO ACCESS REFORM.

In the initial round of comments, USTA and many LECs (many of whom followed USTA's lead) suggested substantial changes to the current price cap structure to accommodate varying degrees of LEC pricing flexibility in response to varying degrees of competitive pressures faced by the LECs in their service areas. As set forth in its comments, Ameritech advocates a variation of USTA's proposal for pricing flexibility that is appropriate now as a result of changes in the competitive environment that have already occurred and that are certain to occur in the near future. However, if the Commission is not inclined to adopt such comprehensive changes in the context of this docket, Ameritech would offer the following as a plan that could be adopted on a temporary basis until broader access reform is effected.

First, for trunking services, based on certification by the LEC of the presence of competition, individual wire centers could be moved from any one of the existing zones to a new pricing zone. This certification would be based on evidence of competition such as a working interconnection cross-connect or a letter or sales material from a competitor indicating an intent to provide service in the wire center. Rates in the new zone would be averaged within each wire center. In addition, however, contract pricing would be permitted, and all services would receive streamlined treatment as that term

¹⁹ Or at least modify it by permanently embedding current sharing amounts into base price cap index figures and eliminating the annual review of LEC earnings on a going-forward basis.

is currently applied to non-dominant carriers.²⁰ Prices in the new zone would be constrained by market forces. LECs would be required to price service above incremental cost. The services would remain within price caps so that revenues in these zones would factor into the basket's actual price index ("API") and be subject to overall index restrictions.

In addition, to permit full use of the downward pricing flexibility created by zone pricing, Ameritech proposes that the downward bound for all zones be extended to -15% and that the downward bound on all service bands and subindexes be set to the lowest level of all related bands (with the exception of the new zone proposed above which would have no pre-set lower limit). For example, for the trunking basket, the high capacity band and DS-1 and DS-3 subindexes would be changed to permit a -15% downward flexibility (rather than the current -5%) to correspond with the new -15% zone limit. This would eliminate the current problem of requiring price increases somewhere in the basket in order to take advantage of full downward flexibility in a particular subindex.

Finally, price zones should be established for local switching with +5%/-15% bounds for each zone. Upon certification of competition, as described above for trunking, the wire centers would be moved to the new competitive zone with pricing characteristics similar to that described above for trunking.

These changes would result in benefits to access customers by affording LECs the ability to offer competitive rates in competitive situations. It would permit LECs to send appropriate economic signals to the competitive marketplace so that less efficient potential competitive entrants would not be lured by the hopes of uneconomic profitability under an artificial LEC pricing umbrella. Nonetheless, competition would be protected by the requirement that all rates must be above an appropriate incremental


²⁰ Tariffs would be effective on one days notice and no cost support would be required.

cost standard. These changes would adopt the price cap plan in the response to the current competitive environment. Additional changes would be required to transform the plan into a truly forward-looking regulatory scheme.

VI. CONCLUSION.

The Commission should use this opportunity to improve price cap regulation by removing impediments to LEC investment in the NII and barriers to LEC provision of services on a competitive basis. These changes would redirect price cap regulation toward the Commission's original goals and form the basis of a regulatory model that anticipates the continued evolution of competition and technology rather than reacting to it.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Michael S. Pabian", is written over a horizontal line.

Michael S. Pabian
Attorney for Ameritech
Room 4H76
2000 West Ameritech Center Drive
Hoffman Estates, IL 60196-1025
(708) 248-6044

Dated: June 29, 1994

CERTIFICATE OF SERVICE

I, Deborah L. Thrower do hereby certify that a copy of the foregoing Reply Comments of Ameritech has been served on all parties listed on the attached service list by first class mail, postage prepaid, on this 29th day of June, 1994.

By: Deborah L. Thrower
Deborah L. Thrower

David R. Poe
Cherie R. Kiser
LeBoeuf, Lamb, Greene & MacRae
Attorneys for
Time Warner Communications
1875 Connecticut Avenue, N.W.
Washington, DC 20009-5728

Alan J. Gardner
Vice President, Regulatory
and Legal Affairs
Jeffrey Sinsheimer
Director of Regulatory Affairs
California Cable Television Association
4341 Piedmont Avenue
Oakland, California 94611

Mary McDermott
Vice President and General Counsel
United States Telephone Association
1401 H Street, N.W.
Suite 600
Washington, DC 20005

Lawrence P. Keller
Cathey, Hutton & Assoc., Inc.
Attorney for
United States Telephone Association
3300 Holcomb Bridge Road
Suite 286
Norcross, GA 30092

Anne MacClintock
Vice President - Regulatory Affairs
and Public Policy
The Southern New England
Telephone Company
227 Church Street
New Haven, CT 06510

Michael J. Shortley, III
Attorney for
Rochester Telephone Corporation
180 South Clinton Avenue
Rochester, New York 14646

Gary M. Epstein
James H. Barker
Latham & Watkins
Attorneys for
Bellsouth Telecommunications, Inc.
1001 Pennsylvania Ave., N.W.
Suite 1300
Washington, DC 20004-2505

M. Robert Sutherland
Richard M. Sbaratta
Attorneys for
Bellsouth Telecommunications, Inc.
4300 Southern Bell Center
675 West Peachtree St., N.E.
Atlanta, GA 30375

Robert M. Lynch
Richard C. Hartgrove
Thomas A. Pajda
Attorneys for
Southwestern Bell Telephone Company
One Bell Center, Room 3520
St. Louis, Missouri 63101

James T. Hannon
Sharon L. Naylor
Attorneys for
U S West Communications, Inc.
1020 19th Street, N.W.
Suite 700
Washington, DC 20036

Richard McKenna, HQE03J36
Attorney for
GTE Service Corporation
P.O. Box 152092
Irving, TX 75015-2092

Gail L. Polivy
Attorney for
GTE Service Corporation
1850 M Street, N.W.
Suite 1200
Washington, DC 20036

Michael E. Glover
Edward D. Shakin
Karen Zacharia
Attorneys for
The Bell Atlantic Telephone Companies
1710 H Street, N.W.
8th Floor
Washington, DC 20006

James P. Tuthill
John W. Bogy
Attorneys for
Pacific Bell and Nevada Bell
140 New Montgomery St.
Rm. 1530-A
San Francisco, CA 94105

James L. Wurtz
Attorney for
Pacific Bell and Nevada Bell
1275 Pennsylvania Avenue, N.W.
Washington, DC 20004

Edward R. Wholl
Campbell L. Ayling
Edward E. Niehoff
Attorneys for
The NYNEX Telephone Companies
120 Bloomingdale Road
White Plains, NY 10605

David Cosson
Attorney for
National Telephone Cooperative
Association
2626 Pennsylvania Avenue, N.W.
Washington, DC 20037

Margot Smiley Humphrey
Koteen & Naftalin
Attorney for
National Rural Telecom Association
1150 Connecticut Avenue, N.W.
Suite 1000
Washington, DC 20036

Robert A. Mazer
Nixon, Hargrave, Devans & Doyle
Attorney for
The Lincoln Telephone and
Telegraph Company
One Thomas Circle, N.W., Suite 800
Washington, DC 20005

Lisa M. Zaina
General Counsel
The Organization for the Protection and
Advancement of Small Telephone Companies
21 Dupont Circle, N.W., Suite 700
Washington, DC 20036

John C. Smith
General Counsel
Aeronautical Radio, Inc.
2551 Riva Road
Annapolis, MD 21401

Carol C. Henderson
Executive Director, Washington Office
American Library Association
110 Maryland Avenue, N.E.
Washington, DC 20002-5675

Henry M. Rivera
Ginsburg, Feldman and Bress, Chartered
Attorney for
The Council of Chief State School Officers and
The National Association of Secondary School
Principals
1250 Connecticut Avenue, N.W.
Washington, DC 20036

Marc C. Rosenblum
Robert J. McKee
Peter H. Jacoby
Attorneys for
AT&T Corp.
295 North Maple Avenue, Room 2255F2
Basking Ridge, New Jersey 07920

Marc E. Manly
Attorney for
AT&T Corp.
1722 Eye Street, N.W.
Washington, DC 20006

Elizabeth Dickerson
Manager, Federal Regulatory
MCI Telecommunications Corporation
1801 Pennsylvania Avenue, N.W.
Washington, DC 20006

Peter A. Rohrbach
Linda L. Oliver
Hogan & Hartson
Attorneys for WilTel, Inc.
Columbia Square
555 13th Street, N.W.
Washington, DC 20004-1109

Blaine Gilles, Manager
WilTel, Inc.
Regulatory Affairs
P.O. Box 21348
Tulsa, OK 74121

Heather Burnett Gold
President
Association for Local
Telecommunications Services
1200 19th Street, N.W.
Suite 607
Washington, DC 20036

W. Theodore Pierson, Jr.
Douglas J. Minster
Pierson & Tuttle
Attorneys for Association for Local
Telecommunications Services
1200 19th Street, N.W.
Suite 607
Washington, DC 20036

Danny E. Adams
Jeffrey S. Linder
Wiley, Rein & Fielding
Attorneys for Competitive
Telecommunications Association
1776 K Street, N.W.
Washington, DC 20006

Genevieve Morelli
Vice President & General Counsel
Competitive Telecommunications Association
1140 Connecticut Avenue, N.W.
Suite 200
Washington, DC 20036

Michael J. Ettner
Senior Assistant General Counsel
Personal Property Division
General Services Administration
18th & F Streets, N.W., Room 4002
Washington, DC 20405

Andrew D. Lipman
Russell M. Blau
Swidler & Berlin, Chartered
Attorneys for
MFS Communications Company, Inc.
3000 K Street, N.W.
Washington, DC 20007

David C. Bergmann
Yvonne T. Ranft
Associate Consumers' Counsel
Office of the Consumers' Counsel
State of Ohio
77 South High Street, 15th Floor
Columbus, Ohio 43266-0550

Jonathan E. Canis
Swidler & Berlin, Chartered
Counsel for Intermedia Communications
of Florida, Inc.
3000 K Street, N.W.
Suite 300
Washington, DC 20007

Allan J. Arlow
President and
Chief Executive Office
Computer & Communications
Industry Association
666 11th Street, N.W.
Washington, DC 20001

Charles A. Zielinski
Rogers & Wells
Attorney for
Computer & Communications
Industry Association
607 14th Street, N.W.
Washington, DC 20005

R. Michael Senkowski
Jeffrey S. Linder
Ilene T. Weinreich
Wiley, Rein & Fielding
Attorneys for
Tele-Communications Association
1776 K Street, N.W.
Washington, DC 20006

Jay C. Keithley
Leon M. Kestenbaum
H. Richard Juhnke
Attorneys for Sprint Corporation
1850 M Street, N.W., 11th Floor
Washington, DC 20036

James S. Blaszak
Francis E. Fletcher, Jr.
Gardner, Carton & Douglas
Attorneys for
Ad Hoc Telecommunications
Users Committee
1301 K Street, N.W.
Suite 900 - East Tower
Washington, DC 20005

J. Manning Lee
Senior Regulatory Counsel
Teleport Communications Group, Inc.
One Teleport Drive
Staten Island, NY 10311

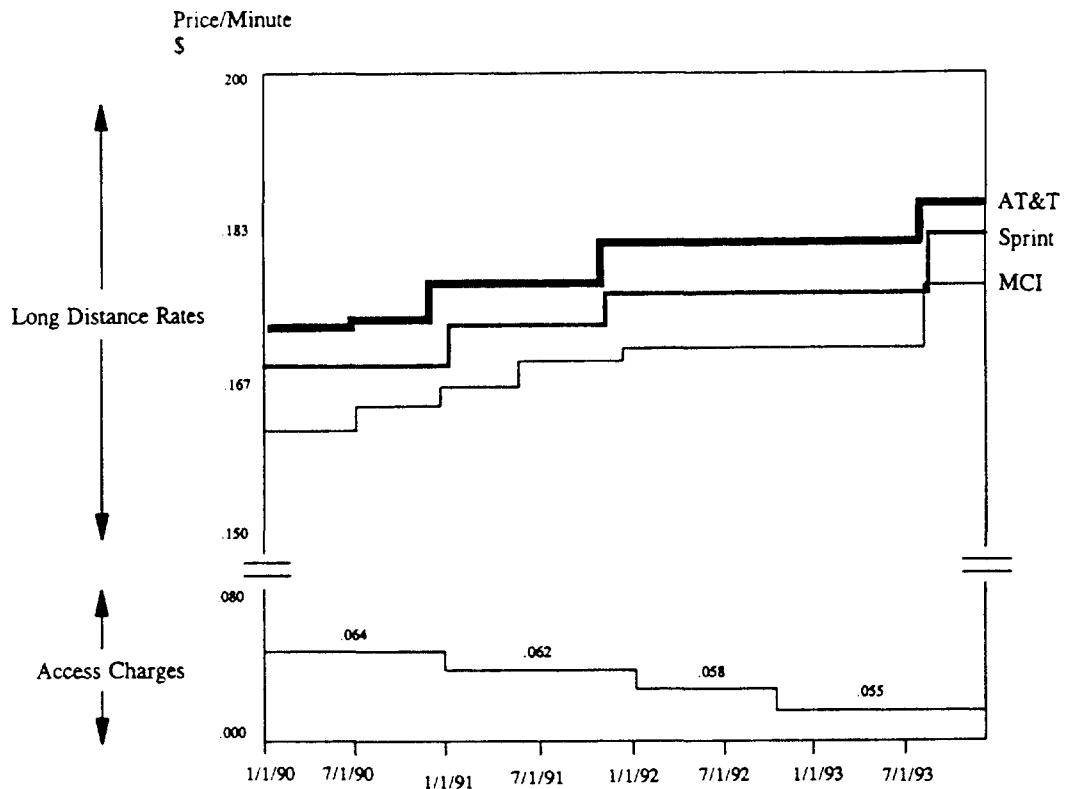
Philip McClelland
Assistant Consumer Advocate
Commonwealth of Pennsylvania
Office of Consumer Advocate
1425 Strawberry Square
Harrisburg, Pennsylvania 17120

James Gattuso
Beverly McKittrick
Citizens for a Sound
Economy Foundation
1250 H Street, N.W.
Washington, DC 20005

Cheryl Campbell, Director
Docket Management & Issue Analysis
Cincinnati Bell Telephone
201 E. Fourth Street, 102-310
P.O. Box 2301
Cincinnati, Ohio 45201-2301

Brian R. Moir
Moir & Hardman
Attorney for
International Communications Association
2000 L Street, N.W.
Suite 512
Washington, DC 20036

Figure 1. Trends in Long Distance Rates and Exchange Access Charges.¹



¹WEFA Group, Economic Impact of Eliminating The Line-of Business Restrictions on the Bell Companies (July 1993); Robin Gareiss, Rate Hikes: MCI, Spring Follow AT&T's Lead, Communications Week, August 9, 1993, at 60. With the exception of the most recent rate increase, long distance rates are based on the average price per minute for basic service. For the most recent rate increase, MCI and Sprint rates are estimated as the average of their stated range of rate increases. AT&T rates are estimated as the average of its proposed business rate increase and its smaller proposed residential rate increase--a conservative estimate, considering that more revenue comes from business customers than from residential customers.

June 24, 1994

**THE EFFECT OF INCENTIVE REGULATION ON
LOCAL EXCHANGE COMPANIES'
DEPLOYMENT OF DIGITAL INFRASTRUCTURE**

by

Shane Greenstein, Susan McMaster and Pablo T. Spiller*

* To be presented at the AET's *"Telecommunications Summit: Competition and Strategic Alliances,"* July 7, 1994. The authors are, respectively, Assistant Professor of Economics, University of Illinois, Urbana-Champaign; PhD Candidate in Economics, University of Illinois, Urbana-Champaign; and William B. McKinley Professor of Economics, University of Illinois, Urbana-Champaign, Visiting Professor of Business and Public Policy, University of California, Berkeley. This research was funded, in part, by the Ameritech Co., through the Law and Economics Consulting Group, Inc. of Emeryville, CA.

EXECUTIVE SUMMARY

This study examines the investment patterns of all large local exchange telephone companies in the United States over time. This study identifies how different regulatory environments have influenced the recent historical pattern of investment in modern infrastructure equipment. It focuses exclusively on the post-divestiture experience of local telephone exchange companies (LECs). It examines the growth of fiber-optic deployment and of complementary equipment associated with the modernization of today's information infrastructure.

The study estimates the influence of different regulatory structures on infrastructure deployment by LECs. Our study is unique in that we relate individual LEC investment patterns to *LEC-specific* regulatory, demographic and economic characteristics. Thus, we isolate the contribution of state regulatory policies from that of other demographic and economic factors in the determination of infrastructure deployment at the state LEC rather than at the corporate level.

Our main findings are as follows:

- Incentive regulation policies, and in particular price regulation schemes, do influence the level of deployment of modern equipment at the local exchange level in a manner consistent with economic theory.
- More liberal regulatory environments lead to greater incentives to deploy modern equipment, and LECs respond to those incentives.
- Price regulation (and in particular price caps) is a more potent regulatory mechanism than the standard earnings sharing scheme.
- When associated with an earnings sharing scheme, price regulation is less effective in triggering infrastructure deployment than when it is implemented by itself.
- Price regulation would have increased infrastructure deployment by approximately 100% in those states that by 1991 have not adopted any incentive regulation scheme.

These results raise questions about the effectiveness of a popular regulatory instrument --earnings sharing schemes--, and highlight the effectiveness of generic price cap regulation. These results have implications for the design of regulatory policy at both the state and federal level. In particular, given the importance being currently placed on the development of the information superhighway, regulatory emphasis should be placed more on price regulation rather than on regulating profits.

TABLE OF CONTENTS

I. INTRODUCTION	1
II. INCENTIVE REGULATION AND INFRASTRUCTURE DEPLOYMENT	3
Investment in Modern Equipment under Rate of Return	3
Price Cap Methods	4
Price Stabilization Schemes	6
Earnings Sharing Schemes	7
Combinations of Price Regulation and Earnings sharing Schemes	10
III. THE EVOLUTION OF THE STATES' REGULATORY ENVIRONMENT	12
IV. AN EMPIRICAL FRAMEWORK	14
Main Empirical Hypotheses	14
Data Requirements	15
The Econometric Framework	16
V. DATA	19
Endogenous Variables	20
Exogenous variables	22
Economic and Demographic Data	22
The State Regulatory Environment: Incentive Regulation	25
The Regulatory Environment: General Conditions	29
VI. EMPIRICAL RESULTS	33
Preliminaries	33
Partial Adjustment Model	35
A Baseline Growth Model	39
VII. CONCLUSION	42
TABLE 1: INFRASTRUCTURE INVESTMENT	45
TABLE 2: PARTIAL ADJUSTMENT MODEL	46
TABLE 3: AVERAGE PREDICTED EFFECT OF INCENTIVE REGULATION	47
TABLE 4: FIBER OPTIC CABLE,BASELINE GROWTH MODEL	48
TABLE 5: BASELINE GROWTH MODEL	49
TABLE 6: AVERAGE PREDICTED EFFECT OF INCENTIVE REGULATION	50
FIGURE 1: THE STATES REGULATORY ENVIRONMENT	51
FIGURE 2: FIRMS SUBJECT TO PRICE REGULATION AS OF 1991	52
FIGURE 3: FIRMS SUBJECT TO EARNINGS SHARING AS OF 1991	53
FIGURE 4: DIGITAL GROWTH	54
APPENDICES	

I. INTRODUCTION

The national telecommunications infrastructure did not arise overnight, nor did it arise under the guidance of any single policy vision or as part of a single commercial plan. Dramatic changes in regulations, many relating to the divestiture of AT&T, have accelerated the introduction of competitive forces into every aspect of telecommunications. Yet, as represented by the variety of regulations in place across the United States, there is still no general agreement about the appropriate approach for encouraging modernization of the US telephone system.

This study examines the investment patterns of all large local exchange telephone companies in the United States over time. It identifies how different regulatory environments have influenced the recent historical pattern of investment in modern infrastructure equipment. It focuses exclusively on the post-divestiture experience of local telephone exchange companies (LECs). It examines the growth of fiber-optic deployment and of complementary equipment associated with the modernization of today's information infrastructure.

This study takes advantage of the natural experiment provided by the two-tiered regulatory structure of the United States. This structure produces 51 different regulatory structures across hundreds of local exchange carriers. The study relates different regulatory structures to the different investment behavior observed. Our study is unique in that we relate LEC investment patterns to *LEC-specific* regulatory, demographic and economic characteristics. Thus, we isolate the contribution of state regulatory policies from that of other demographic and economic factors in the determination of infrastructure deployment at the state LEC rather than at

the corporate level.²

Our main findings are that regulatory policies, and in particular price regulation schemes, do influence the level of deployment of modern equipment at the local exchange level in a manner that is consistent with economic theory. This pattern persists in similar degrees for three of our four measures of infrastructure deployment -- Fiber Optic cable, SS7 and ISDN, but not for digital stored program controlled switches. This pattern persists even though we control for demographic and economic features of the local service territories. The latter are important economic determinants of the demand for, and costs of, infrastructure deployment. Finally, our results hold for alternative specifications of the statistical relationship between regulatory and economic incentives and the infrastructure deployment.

We find that, in general, more liberal regulatory environments lead to greater incentives to deploy modern equipment, and that LECs respond to those incentives. By analyzing regulatory environments in more detail we find that price regulation (and in particular price caps) is a more

² We are aware of only one prior study that has attempted to estimate the impact of incentive schemes on infrastructure deployment. See Taylor, W.E., C.J. Zarkadas and J.D. Zona, "Incentive Regulation and the Diffusion of New Technology in Telecommunications," mimeo, NERA, 1992. We differ from their work in several dimensions, most importantly by the nature of our data. First, we include all large local exchange companies. Second, we have regulatory information specific to the firm. Third, our infrastructure and economic measures are at the LEC, rather than at the holding company level. Thus, we are able to isolate more clearly the impact of regulatory and economic factors in the infrastructure deployment decision. Other studies have attempted to estimate the impact of incentive scheme of telephone prices. See, for example, Mathios, Alan D. and Robert P. Rogers, The Impact of Alternative Forms of State Regulation of AT&T on Direct Dial Long Distance Telephone Rates, The RAND Journal of Economics, Vol. 20, No. 3, Autumn 1989.

potent regulatory mechanism than the standard earnings sharing scheme. Indeed, we find that when associated with an earnings sharing scheme, price regulation is less effective in triggering infrastructure deployment than when it is implemented by itself. We simulate the effects of incentive regulations. We show that price regulation would have increased infrastructure deployment by approximately 100% in those states that by 1991 have not adopted any incentive regulation scheme. On the other hand, introducing earnings sharing schemes would not dramatically alter LECs' infrastructure deployment plans. These results raise questions about the effectiveness of a popular regulatory scheme, and highlights the effectiveness of generic price cap regulation.

II. INCENTIVE REGULATION AND INFRASTRUCTURE DEPLOYMENT

Investment in Modern Equipment under Rate of Return

The relation between the regulatory environment and infrastructure deployment is not a simple one. The traditional Averch-Johnson (A-J) approach to the analysis of rate-of-return regulation suggests that rate-of-return regulation promotes capital overinvestment. If this is correct, then traditional regulatory methods should be associated with overinvestment in equipment, including modern infrastructure. There are several reasons to think that the A-J approach is incorrect. First, as discussed by Joskow (1973),³ rate of return regulation has never operated in the way postulated by A-J. Regulators do not systematically bring companies' rate of return to the specified limit, but rather there is a subtle game between the companies and the

³ Joskow, P. 1973. "Pricing Decisions of Regulated Firms: A Behavioral Approach." Bell Journal of Economics and Management Science 118-140.